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EXAMINER	
KRISHNAN, VIVEK V	

ART UNIT	PAPER NUMBER
2445	

NOTIFICATION DATE	DELIVERY MODE
04/24/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

iplawyor@us.ibm.com

Office Action Summary	Application No.	Applicant(s)	
	10/776,297	EILAM ET AL.	
	Examiner	Art Unit	
	Vivek Krishnan	2445	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-6 and 8-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-6 and 8-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This action is responsive to the Amendment/Arguments filed on January 3, 2009. Claims 1, 2, 6, 8, 10, 11, 14, 16, 17, 18, 21, 22, and 25 have been amended. Claims 3 and 7 have been cancelled. Claims 1, 2, 4-6, and 8-25 are pending.

Response to Arguments

1. Applicant's arguments filed with respect to Claim Rejections under 35 U.S.C. 102(e) and 35 U.S.C. 103(a) have been fully considered -

As to Applicant's arguments with respect to Claim 1:

a. Applicant argues that Osborn does not disclose the handling of both software and hardware resources.

Applicant's arguments are moot in view of the new ground(s) of rejection.

b. Applicant argues that Osborn does not map a model to a knowledge subsystem but rather software jobs to hardware that will run the jobs.

Examine respectfully disagrees. Osborn, see column 3 lines 17-59, column 4 lines 15-23, discloses generating an application abstract resource description describing a resource structure that is derived from the object specification and is mapped to resources in the system. Furthermore, Osborn discloses obtaining an abstract resource description describing virtual hardware resource objects and using the abstract resource description to create a matching resource structure to satisfy the requirements of the service environment. Hence, Osborn discloses mapping a model to a knowledge subsystem.

c. Applicant argues that Lennon does not disclose the refinement step of selecting a node and replacing the node with a sub graph and repeating until an intermediary model is mappable.

Examiner respectfully disagrees. Based on Applicant's clarification of the refinement step in Claim 1, Examiner asserts that Osborn also discloses one refinement step such that a resource description is formed and mapped to the resources in the system. However, Osborn is silent regarding multiple refinement steps with multiple intermediary models created. Examiner advises that Applicant specify that at the very least more than one intermediary model is created prior to mapping the intermediary model to the knowledge subsystem in order to distinguish this feature from Osborn - otherwise the creation of a single intermediary model is equivalent to a final model mapped to the system with no iteration necessary.

Osborn does not explicitly disclose, however Lennon discloses representing a resource as a sub graph structure (Lennon; paragraphs 115, 116, 154-156; resource description).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify mapping resources to resource requirements, as disclosed by Osborn, to include representing resources as a sub graph structure in the process of mapping/replacing, as disclosed by Lennon, in order to facilitate the creation and use of resource descriptions.

2. Applicant's arguments with respect to Claim Rejections under 35 U.S.C. 112, first paragraph, has been fully considered and are persuasive. The rejections of Claims 1 and 2 have been withdrawn.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 2, 4-6, 8-14, 19, and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,050,807 to Osborn (hereinafter "Osborn"), U.S. Patent Application Publication No. 2003/0208473 A1 to Lennon (hereinafter "Lennon"), and U.S. Patent Application Publication No. 2004/0039772 to De Miguel et al.

5. As to Claims 1 and 21, Osborn discloses a method (and an apparatus) for generating a Concrete Model of a computing utility comprising the steps of:

Receiving as input an infrastructure-independent Service Environment Model of a service environment, said Service Environment Model describing a set of requirements for an initial desired state of said service environment (Osborn discloses obtaining an object specification, or application specification, with virtual application objects of an application which describe requirements associated with the application, see column 3 lines 44-59, column 4 lines 15-23, and Figure 2 reference number 68);

Receiving as input an Infrastructure Model describing both hardware [...] resources and an organization of said resources in the computing utility infrastructure, said Infrastructure Model representing knowledge encapsulated in a knowledge subsystem, wherein said knowledge subsystem comprises a set of objects used to represent resource instances and relationships, configure resources and relationships, query their state, and query their configuration capabilities and constraints (Osborn discloses obtaining a hardware abstract resource description, or hardware specification, in a system describing both resources and an organization of the resources, see column 3 lines 17-44 and Figure 8); and

Generating provisioning actions to reach a state that satisfies the set of requirements specified in the Service Environment Model, wherein the generating step comprises steps of: merging the Service Environment Model with the Infrastructure Model to generate the Concrete Model, said Concrete Model describing a structure to implement on the computing utility infrastructure in order to reach the desired state as expressed in the Service Environment Model and being mappable to said knowledge subsystem [...] (Osborn discloses generating an application abstract resource description describing a resource structure, see Figure 9, that is derived from the object specification mentioned above and is mapped to resources in the system, see column 3 lines 60-67 and column 4 lines 1-14).

Although Osborn does not explicitly disclose provisioning software resources, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the disclosure of Osborn, to include the provisioning of software resources (De Miguel; paragraphs 17-23), in order to facilitate the provisioning of services.

Osborn further discloses nodes representing resources and requirements on a state of the resources as well as edges representing relationships between the resources (Osborn; column 3 lines 17-44 and Figure 8). Osborn further discloses replacing/mapping the node to a resource (with specified interdependencies) in order to create a model that is mapped to the system. Osborn does not explicitly disclose, however Lennon discloses representing a resource as a sub graph structure (Lennon; paragraphs 115, 116, 154-156, Figure 5; resource description and replacement with a sub tree structure).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify mapping resources to resource requirements, as disclosed by Osborn, to include representing resources as a sub graph structure in the process of mapping/replacing, as disclosed by Lennon, in order to facilitate the creation and use of resource descriptions.

6. As to claim 2, Osborn, Lennon, and De Miguel disclose each and every limitation of claim 1. Osborn further discloses wherein the step of receiving as input the Service Environment Model of the service environment comprises receiving a description of a set of requirements on a desired state of said service environment (Osborn discloses the object specification, or application specification, includes virtual application objects that describe requirements on a new desired state of the service environment of the application, see column 3 lines 44-59, column 4 lines 15-23, and Figure 2 reference number 68).

7. As to claim 4, Osborn, Lennon, and De Miguel disclose each and every limitation of claim 1. Osborn further discloses wherein said service environment is an entity taken from a group of entities consisting of:

A Web site,

an on-line gaming service,

a scientific computation service,

an e-business service,

a computing service (Osborn discloses a service environment for an application, see column 3 lines 60-67 and column 4 lines 1-14), and

any combination of these.

8. As to claim 5, Osborn, Lennon, and De Miguel disclose each and every limitation of claim 1. An article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing generation of a Concrete Model, the

computer readable program code means in said article of manufacture comprising computer readable program code means for causing a computer to effect the steps of claim 1 (Osborn discloses the system of Figures 1 and 2 to effect the steps of claim 1, see Figures 1 and 2).

9. As to claim 6, Osborn, Lennon, and De Miguel disclose each and every limitation of claim 1. Osborn further discloses wherein the step of receiving as input the Infrastructure Model comprises an action taken from a group of actions consisting of:

querying at least one knowledge subsystem entity (Osborn discloses obtaining the hardware abstract resource description by obtaining information from a hardware resource manager, see column 3 lines 28-43);

querying Resource Managers (Osborn discloses obtaining the hardware abstract resource description by obtaining information from a hardware resource manager, see column 3 lines 28-43),

querying Resource Instance Services,

querying a best practices catalog;

obtaining knowledge of available resource types (Osborn discloses obtaining the hardware abstract resource description by obtaining information on resource group types, see column 5 lines 52-56 and Figure 8);

obtaining knowledge of resources constraints (Osborn discloses obtaining the hardware abstract resource description by obtaining information on resource group designations and other constraints inherently associated with resource attributes, see column 6 lines 3-20 and Figure 8);

obtaining knowledge of resource capabilities (Osborn discloses obtaining the hardware abstract resource description by obtaining information on resource attributes, see column 6 lines 45-65 and Figure 8);

obtaining knowledge of infrastructure constraints (Osborn discloses obtaining the hardware abstract resource description by obtaining information on resource group designations and other constraints inherently associated with resource attributes, see column 6 lines 3-20 and Figure 8);

obtaining knowledge of infrastructure capabilities (Osborn discloses obtaining the hardware abstract resource description by obtaining information on resource attributes, see column 6 lines 45-65 and Figure 8);

obtaining knowledge of infrastructure best practices patterns; and

any combination of these actions.

10. As to claim 8, Osborn, Lennon, and De Miguel disclose each and every limitation of claim 7. Lennon further discloses wherein said step of replacing comprises a limitation taken from a group of limitations consisting of:

querying a best practices catalog;

generating sub graph patterns dynamically;

employing graph matching techniques to obtain said sub-graph structure (Lennon discloses matching the sub tree structure to the description object, see page 11 paragraph 155 and Figure 5);

employing graph merging techniques to obtain said sub-graph structure (Lennon discloses merging the sub tree structure to the description object, see page 11 paragraph 155 and Figure 5); and

any combination of these limitations.

11. As to claim 9, Osborn, Lennon, and De Miguel disclose each and every limitation of claim 1. Osborn further discloses a program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for generating a Concrete Model, said method steps comprising the steps of claim 1 (Osborn discloses the system of Figures 1 and 2 that comprise the steps of claim 1, see Figures 1 and 2).

12. As to claim 10, Osborn, Lennon, and De Miguel disclose each and every limitation of claim 1. Osborn further discloses further comprising using the Concrete Model to enforce a policy based service provider's best practices in implementation of Service Environments in the computing utility infrastructure (Osborn discloses generating the Concrete Model to enforce the requirements needed to run the application, see column 3 lines 1-8 and column 4 lines 15-23).

13. As to claim 11, Osborn, Lennon, and De Miguel disclose each and every limitation of claim 10. Osborn further discloses wherein the best practices are encoded as patterns in a best practices catalog and used in the step of generating the Concrete Model (Osborn discloses the requirements are derived from an application object library column 3 lines 9-12).

14. As to claims 12 and 22, Osborn, Lennon, and De Miguel disclose each and every limitation of claims 1 and 21. Osborn further discloses (means for) employing said Concrete Model to generate provisioning actions, said provisioning actions, when executed, create a resource structure that matches the description in the Concrete Model, said resource structure satisfies said set of requirements on new desired state of said service environment (Osborn discloses obtaining an abstract resource description describing virtual hardware resource objects and using the abstract resource description to create a matching resource structure to satisfy the requirements of the service environment, see column 3 lines 60-67).

15. As to claim 13, Osborn, Lennon, and De Miguel disclose each and every limitation of claim 12. Osborn further discloses employing said provisioning to enforce a policy based service provider's best practices in implementation of service environments in the computing utility infrastructure (Osborn discloses employing provisioning to enforce the requirements needed to run the application, see column 3 lines 1-8, 60-67 and column 4 lines 15-23).

16. As to claim 14, Osborn, Lennon, and De Miguel disclose each and every limitation of claim 13. Osborn further discloses wherein the best practices are encoded as patterns in a best practices catalog and used in the step of forming the Concrete Model (Osborn discloses the requirements are derived from an application object library column 3 lines 9-12).

17. As to claims 19 and 24, Osborn, Lennon, and De Miguel disclose each and every limitation of claims 1 and 21. Osborn further discloses (means for) employing said Concrete

Model to generate a Resource Manager for a composite resource, and provisioning and managing computing services in a computing utility system, based on a high level description of the characteristics and structure of desired computing services and a representation of the computing utility infrastructure used as a platform to implement the said computing services (Osborn discloses that a hardware resource manager employs the application hardware resource specification and a hardware resource diagram, which represents a composite resource, see column 6 lines 3-20 and Figure 8, to allocate the composite resource and thereby create a resource manager for the composite resource, see column 7 lines 1-25).

18. As to claim 23, Osborn, Lennon, and De Miguel disclose each and every limitation of claim 21. Osborn further discloses a computer program product comprising a computer usable medium having computer readable program code means embodied therein for causing generation a Concrete Model, the computer readable program code means in said computer program product comprising readable program code means for causing a computer to effect the functions of claim 21 (Osborn discloses the system of Figures 1 and 2 to effect the functions of claim 21, see Figures 1 and 2).

19. As to claim 25, Osborn, Lennon, and De Miguel disclose each and every limitation of claim 1. Osborn further discloses where the step of generating a Concrete Model is performed by a user taken from a group of users consisting of:

a service provider,

a customer of a service provider,

a company owning an IT infrastructure (Osborn discloses an application developer, see column 3 lines 1-15 and column 8 lines 12-23), and

a utility provider (Osborn discloses an application developer, see column 3 lines 1-15 and column 8 lines 12-23).

20. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osborn, Lennon, and De Miguel, as applied to claim 12 above, and in further view of U.S. Patent No. 6,332,023 B1 to Porter et al. (hereinafter "Porter").

21. As to claim 15, Osborn, Lennon, and De Miguel disclose each and every limitation of claim 12. In addition, Osborn and Porter in combination disclose wherein step of provisioning includes a task taken from a group of tasks consisting of:

creating a new service environment (Osborn discloses allocating resources to an application to create a service environment, see column 3 lines 60-67),

changing the combination of resources allocated to a service environment (Osborn discloses allocating resources to an application to create a service environment, see column 3 lines 60-67. In addition, Porter discloses de-allocating resources allocated to a service environment, see column 3 lines 40-50),

changing the configuration of resources allocated to a service environment (Porter discloses changing the configuring of a resource that has been allocated to a service environment, see column 3 lines 30-40), or

destroying a service environment , or

any combination of the above.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Osborn's disclosure of provisioning to include the ability to change the configuration of resources in order to provide for a more flexible allocation of resources, see column 2 lines 35-54 of Porter.

22. As to claim 16, Osborn, Lennon, De Miguel, and Porter disclose each and every limitation of claim 15. Porter further discloses wherein changing the configuration of resources allocated to a service environment include:

changing the local state of a resource (Porter discloses updating static and dynamic resource attributes, see column 1 lines 66-67, column 3 lines 1-20), or

changing the way the resource is configured to work with other resources.

23. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osborn, Lennon, and De Miguel, as applied to claim 1 above, and in further view of U.S. Patent Application Publication No. 2004/0128397 A1 to Glasmann et al. (hereinafter "Glasmann").

24. As to claim 17, Osborn, Lennon, and De Miguel disclose each and every limitation of claim 1. Osborn, Lennon, and De Miguel do not explicitly disclose, but Glasmann discloses regenerate provisioning instructions whenever at least one of the following occurs:

infrastructure characteristics change (Glasmann discloses allocating resources when there is a change in the topology, see page 1 paragraph 5, 8, and 9), and

requirements of a service change.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Osborn's disclosure of provisioning resources to include providing resources when infrastructure characteristics change in order to provide for adaptive resource checking and reacting to topology changes (see page 1 paragraphs 7 and 10 of Glasmann).

25. As for claim 18, Osborn, Lennon, De Miguel, and Glasmann disclose each and every limitation of claim 17. Glasmann further discloses wherein the infrastructure characteristics include a characteristic taken from a group of characteristics consisting of:

types of resources in the infrastructure,

capabilities of said resources (Glasmann discloses topology changes include changes in the capabilities of a resource, see page 1 paragraphs 4 and 5),

configuration of said resources (Glasmann discloses topology changes include changes in the configuration of a resource, see page 1 paragraphs 4 and 5),

constraints on configuration of said resources,

best practices patterns as defined in the best practices catalog, and

any combination of the above.

26. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Osborn, Lennon, and De Miguel, as applied to claim 19 above, and in further view of U.S. Patent No. 6,901,446 B2 to Chellis et al. (hereinafter "Chellis").

27. As for claim 20, Osborn, Lennon, and De Miguel disclose each and every limitation of claim 19. Osborn does not explicitly disclose, but Chellis discloses wherein said Resource Manager provides a set of resource manager methods taken from a group of resource manager methods consisting of:

creating composite resources based on a Concrete Model (As mentioned above, Osborn does disclose a resource manager for a composite resource. However, Osborn does not explicitly disclose, but Chellis discloses a resource manager capable of creating a composite resource, or set of interdependent resources, based on defined resource requirements for a service, see column 3 lines 36-59),

changing composite resources based on a Concrete Model (As mentioned above, Osborn does disclose a resource manager for a composite resource. However, Osborn does not explicitly disclose, but Chellis discloses a resource manager capable of changing a composite resource, or set of interdependent resources, based on defined resource requirements for a service, see column 3 lines 36-67 column 4 lines 1-27 and column 9 lines 55-67),

destroying composite resources based on a Concrete Model, and

any combination of these methods.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Osborn's disclosure of a resource manager the ability to create and change

composite resources in order to provide increased functionality to the resource manager and, in addition, to provide for more robust allocation of composite resources (see column 2 lines 44-67 and column 3 lines 1-6).

Conclusion

28. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent Application Publication No. 2004/0243613 to Pourheidari

U.S. Patent Application Publication No. 2004/0177245 to Murphy

U.S. Patent Application Publication No. 2004/0088417 to Bober et al.

U.S. Patent Application Publication No. 2004/0243699 to Koclanes et al.

29. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vivek Krishnan whose telephone number is (571) 270-5009. The examiner can normally be reached on Monday through Friday from 9:00 AM to 5:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached on (571) 276-9456. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/V. K./
Examiner, Art Unit 2445

/Patrice Winder/
Primary Examiner, Art Unit 2445